

A MODULAR GARDEN BUILDING**Field of Invention**

5 This invention relates to a building structure referred to as a garden building, to be used in the compound of a house for various purposes.

**Background of the Invention**

10

The garden building is intended to be a small building structure outside of a house for various utility. It is meant to be available to the user in modular form for the ease of storage and transportation. It is intended that a user may buy  
15 the invention in its modular form and takes it home his or her own transport. Then he or she may conveniently set up the garden building in his or her own compound by him or herself, without the need of special tools. It conceived that houses having compounds or gardens yet without a garage might find  
20 such a garden building useful, i.e. for storage of gardening tools and related materials.

Generally these advantages in modularity, storage, transportation and setting up and intended usefulness are made  
25 available by the simplicity in the design of the invention as a whole. Specifically, the simple and yet practical joints or interconnections that are utilized, which will be exemplified later, enables the user to conveniently set up the garden building in his or her own compound by him or herself, without  
30 the need of special tools. The simplicity in design makes the invention cost effective for manufacturer also since it makes it easier to manufacture the invention.

In simple building structures such as this garden building or pet houses or any other similar small and simple building structures, joints have structural importance especially in ensuring that the entire structure is rigid and not shaky or  
5 swaying. Therefore, designers of various simple building structures that may also be small have come up with various designs of joints for their structures. GB 2240024 taught joints being inserts and slots. Specifically, the pet house exemplified therein uses H-shape slots and mating walls has H-  
10 shape inserts. Although such joints are structurally rigid by themselves, there is little room for tolerance in such a H-joint itself as there are a number of different complementing surfaces that comes into contact simultaneously. This is obvious from tracing the periphery of cross-section of such a  
15 joint.

WO0161127 uses panels to form the building itself. It however uses latches and clamps on profiles as means of joining different panels together. GB621389 is a hut that is  
20 significantly larger than the present invention. As such it needs to utilize a very rigid structure - metal framework with sole plates for resting on ground. Such rigid base and framework is not necessary for the present invention since it is much smaller and defeats the purposes of invention as  
25 briefly mentioned above. DE19920556 and EP1188872 are another two examples of such garden buildings, but they are larger and building them requires local builders; thus labour intensive.

In general, accuracy in manufacturing the joints is critical  
30 especially when there are more than two adjoining walls for any particular structure. It can be quite annoying to the user when different parts could not be properly joined together due to manufacturing inaccuracies. Although such inaccuracies can be kept to minimum due to present day manufacturing

technologies, it is still advantageous to keep a joint as simple as possible, since users may not be skillful enough to accurately join together more than two pieces of the building walls. At least, it will involves some trials and errors for  
5 some users during the assembly.

Thus it is preferable that joints are kept as simple as possible when without trading off the rigidity of the joint. It will be apparent later especially to persons skilled in the  
10 art, that in the present invention jointing problems due to inaccuracies can be kept to a minimum, making manufacturing much cost effective and also much easier for user to assemble. Although there are more complicated joints for different needs, the present invention however do not concern with  
15 these.

It is therefore the objective of the invention to be a utility structure in a garden or compound that can be easily set up by the user.

20 It is also the objective of the invention for its overall design to be simple for the ease of storage and transportation, and specifically for ease of setting up, while at the simultaneously maintaining stability and rigidity of  
25 the invention.

It is specifically the objective of the invention to achieve above-mentioned advantages by means of simple, regular parts that are joined together by means of simple joints; both parts  
30 and joints to be exemplified later.

## **Summary of the Invention**

A modular garden house has sidewalls made up of regular wall panels. These load-bearing sidewalls are held together at  
5 their bottom surface and top surface by interconnections with a base frame and top frame respectively. The base frame is made up of ring beams joined together by bolts and nuts. The top frame is made up of two opposing side ring beams joined together by a pair of identical triangular frames. These  
10 interconnections are made by means of dowels inserted into hole sockets. Roof pieces are roof sheets built on frames. The roof pieces are supported by means of dowels on roof frames inserted into hole sockets on the triangular frames. The opening of the garden building is covered by removable door  
15 panels.

## **Brief Description of the Drawings**

Figure 1 shows the complete assembly of the invention.  
20

Figure 2 shows the top view of the base frame.

Figure 3 shows the interconnection of the wall panels with the base frame.  
25

Figure 4 shows the assembly of the top frame on top of the wall panels, roof pieces and ridge capping.

## **Detailed Description of the Preferred Embodiment**

30

In accordance to the preferred embodiment of the invention, a garden building (100) as shown in Fig. 1 is made up basically of the following elements: wall panels (300), door panels

(310), ring beams (200), triangular frames (410), roof pieces (400) and ridge capping (420).

A ring beam (201) is a rigid, strong and elongated flat beam.  
5 Four ring beams (201a, 201b, 201c, 201d) are joined together using bolts and nuts at each of their ends are used to form a rectangular base frame (105) (Fig. 2). The width and length of the garden building (100) is width and length of the rectangular base frame (105). Furthermore, the ring beams  
10 (201c) corresponding to the rear side and left (201a) and right side (201b) of the building (100) has holes (202) spaced at regular intervals for interconnection with wall panels (300) that will be explained later.

15 Regular vertical wall panels (300) form the sidewalls (101a, 102a, 103a) of the building on the rear side (103), left (101) and right side (102) of the building. Each wall panels (300) may be embodied as a frame as shown in Fig. 1 and 3. Each vertical wall panel (300) has at least two dowels (301a, 301b,  
20 302a, 302b) located at each top (304) and bottom end surface (303) of the wall panels (300) for interconnection of wall panels (300) with base frame (105). The dowels (301a, 301b) at the bottom end surface (303) of any particular wall panel are located in such a manner that each wall panel (300) can be  
25 inserted into the predetermined holes (202) on the base ring beams (201a, 201b, 201c). Furthermore, the holes (202) on the base ring beams (201a, 201b, 201c) are distanced so that they not only receive any particular wall panel (300) but can also receive other similar wall panels (300) placed side by side to  
30 an already interconnected wall panel. Thus the rear side (103), left (101) and right sidewalls (102) are erected by this means of interconnections using dowels such as those of 301a, 301b, 302a, 302b.

These walls (101a, 102a, 103a) are further steadied by the following manner. Side ringbeams (204a, 204b) that are similar to ringbeams described beforehand (201a, 201b) are interconnected with left (101a) and right sidewalls (102a) at their respective top ends (304). These side ringbeams (204) have holes (205) on them at predetermined locations so that they can be inserted into dowels (302a, 302b) on the top end (304) of these sidewalls (101a, 102a, 103a); in similar manner with the dowels (301a, 301b) inserted into the base frame (101).

A triangular frame (410) is interconnected with the top (304) of the rear sidewall (103a) in similar manner of interconnection using dowels (302a, 302b) on the wall panels (300) with holes (hidden from view) located on the base end surface (411) of triangular frame (410); as in the case with other sidewalls (101a, 102a, 103a). This rear end triangular frame (410c) or referred to as first triangular frame is also joined to the side ringbeams (204a, 204b) using bolts and nuts to form a top frame (106). At this juncture it is evident that this top frame (106) is isometric with the base frame (101). Another triangular frame (410d) similar to the first triangular is joined to the other end of the side ringbeams (204a, 204b) at the front side of the garden building. These triangular frames (410c, 410d) have holes (412) predetermined at location on their inclined surfaces (411).

By now roof pieces (400), which are roof sheets (401) mounted on a frame can be supported on the triangular frames (410) by similar means of interconnections that uses dowel and hole sockets as described above. The roof pieces (400) has dowels (402) at predetermined locations to be inserted into the holes (412) on the inclined surface (411) of the triangular frames (410). After the installations of roof pieces (400) there

ridge capping (420) put over two peaks of the triangular frames (410) to complete the assembly.

5 Lastly, the door panels (310) are removable panels placed on the opening of the front side (104) of the garden building (100) to cover it. Seams in between one wall panel with other wall panels (300) and with the ringbeams (200) are sealed with weather seals to prevent water leakage.

10 It is to be understood that the present invention may be embodied in other specific forms and is not limited to the sole embodiment described above. However modification and equivalents of the disclosed concepts such as those which readily occur to one skilled in the art are intended to be  
15 included within the scope of the claims which are appended thereto.

## Claims

1) A garden building comprising of:

5 a base frame whereby said base frame consists of base ring beams that are connected together to form an enclosed frame of any polygonal shape;

a plurality of sidewalls compose of a plurality of wall panels with a plurality of dowels on both end of each said wall panel;

10 at least one door mounted one side of the building;

a top frame whereby said top frame having an enclosed polygonal shape that is isometry with said base frame with said top frame being made up of a pair of opposing side ring beams, said side ring beams are connected together by at least  
15 one pair of triangular frames at ends of said side ring beams; and

at least one pair of roof are supported on inclining sides of said triangular frames by means of frames built on each said roof.

20

2. The garden building as claimed in claim 1, wherein said base frame is rectangular where the length and width of said base frame corresponds to length and width of the garden building.

25

3. The garden building as claimed in any claim 1 to 2, wherein said base ringbeams, said side ringbeams and one of said triangular frame designated henceforth as first triangular frame, that are located at said sidewalls of the garden  
30 building have matching holes located thereon for said dowels to be inserted thereby forming said sidewalls by interconnection of said wall panels with said base ringbeams, said side ringbeams and first triangular frame mentioned herein.



4. The garden building as claimed in any claim 1 to 3, wherein said door compose of a plurality of door panels covering opening on said sidewalls, whereof said opening are sides of the garden building that has no said side panels.

5

5. The garden building as claimed in any claim 1 to 3, wherein any particular said ring beam that is referred to, particularly ring beams belonging whether to said base frame or said top frame, has its ends connected to ring beams next to it to form said base frame or said top frame.

10

6. The garden building as claimed in any claim 1 to 5, wherein said opening are on front side of the garden building.

15

7. The garden building as claimed in any claim 1 to 6, wherein beams between one said side panel with another said side panels; between said side panels and said ring beams and triangular frames are sealed with weather seals.

20

8. The garden building as claimed in any claim 1 to 7, wherein said frames of each roof have a plurality dowels which are inserted into holes on said inclining sides of triangular frames.

25

9. The garden building as claimed in any claim 1 to 8, wherein a ridge capping is placed on top of the peaks of said triangular frames.

1/2

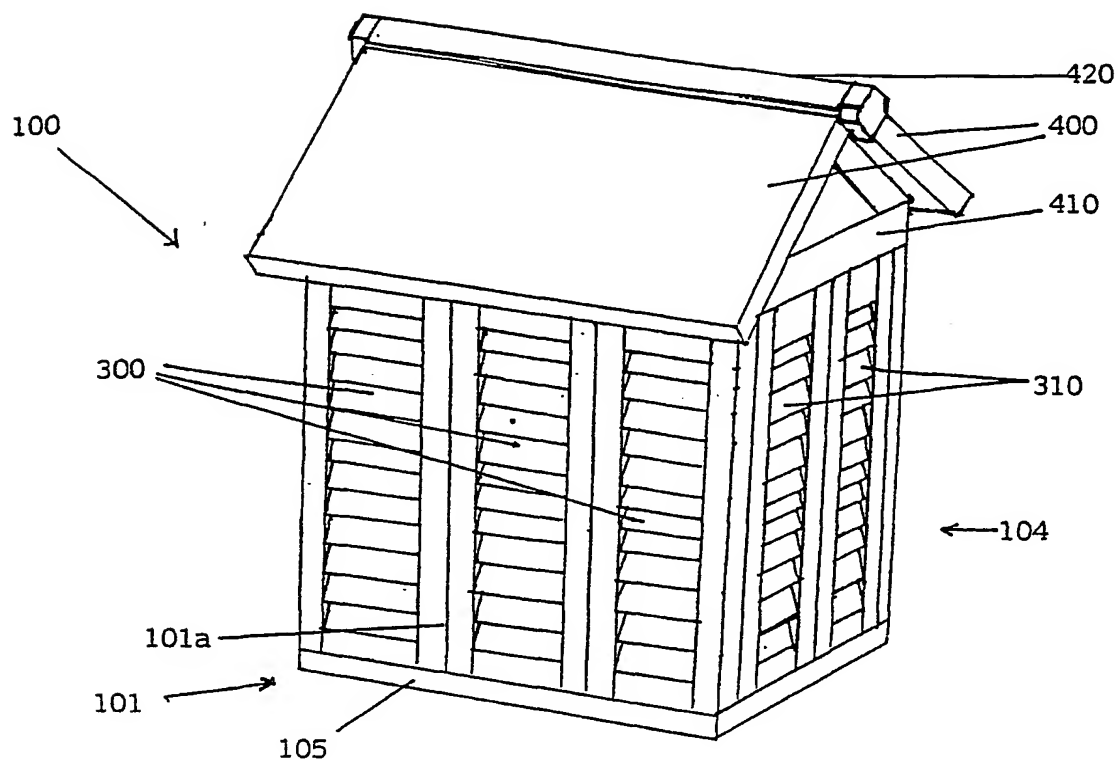


FIG. 1

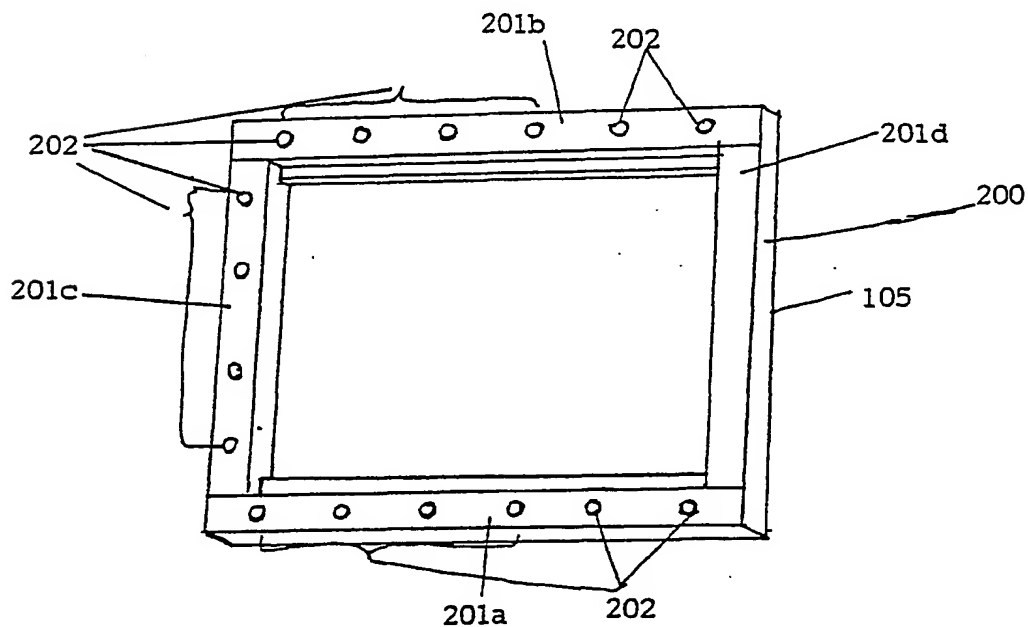


FIG. 2

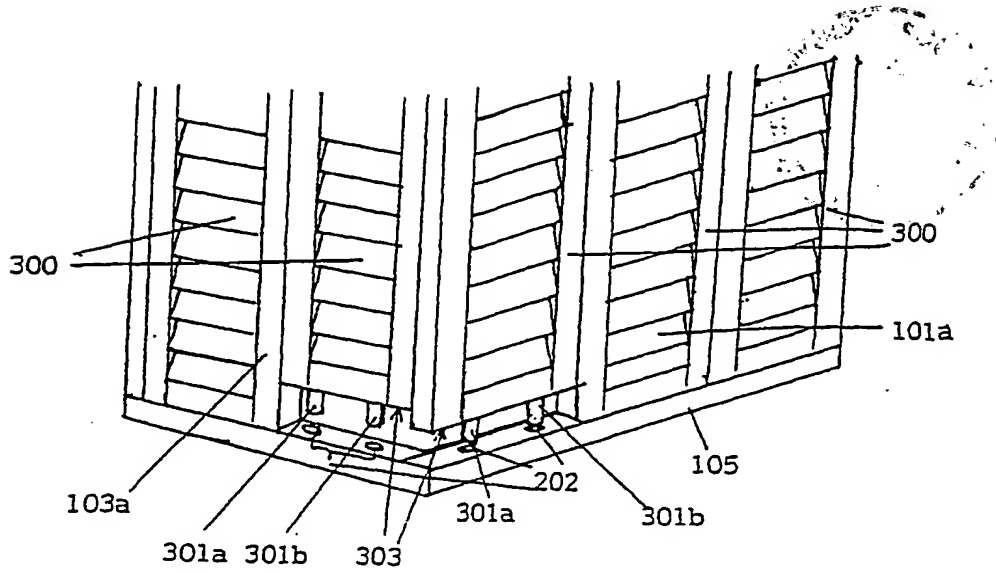


FIG. 3

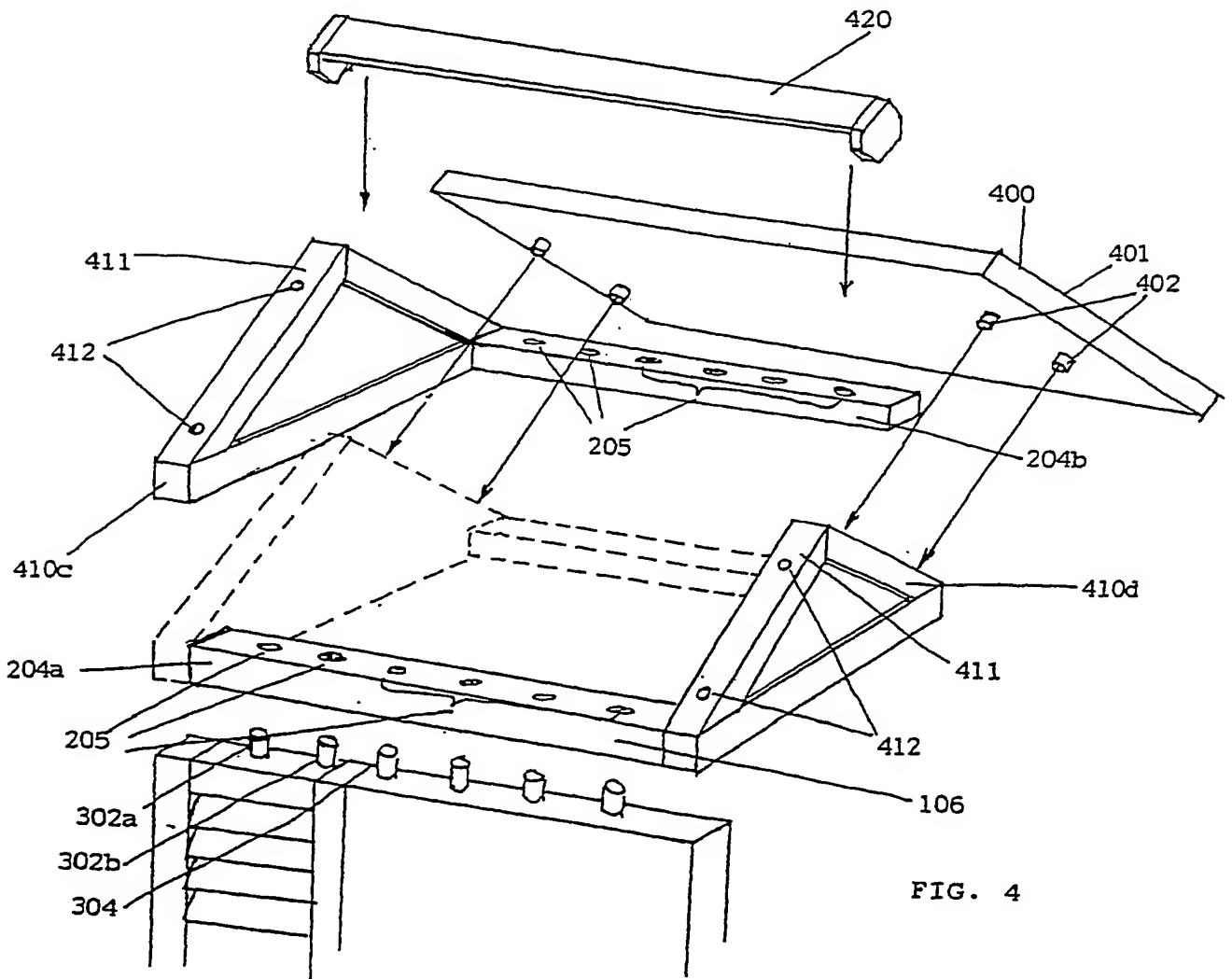


FIG. 4

**A. CLASSIFICATION OF SUBJECT MATTER**

Int. Cl. 7: E04H 1/12

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

WPAT: IPC E04H &amp; keywords: shed, garage, house, shelter, modular, prefabricated, demountable, knockdown, pin, dowel, protrusion, ground, base, wall, frame, ring, skirt, plate, stud and similar terms

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE 3003571 A1 (GUARDIANI et al) 14 August 1980 See the drawings	
A	US 5072554 A (HAYMAN) 17 December 1991 See the drawings	
A	WO 97/18872 A1 (BACH et al) 29 May 1997 See the drawings	

☐

Further documents are listed in the continuation of Box C

☒

See patent family annex

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent but published on or after the international filing date	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&" document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	

Date of the actual completion of the international search 30 October 2003	Date of mailing of the international search report 3 NOV 2003
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized officer  VINCE BAGUSAUSKAS Telephone No : (02) 6283 2110

**INTERNATIONAL SEARCH REPORT**

Information on patent family members

International application No.

**PCT/SG03/00224**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member	
DE	3003571	FR 2448004	IT 1212378
US	5072554	NONE	
WO	9718872	AU 10298/97	US 5876261
			END OF ANNEX